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CHINA'S EMERGENCE IN THE GLOBAL ECONOMY AND BRAZIL

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Introduction

This paper focuses on the impact of China's emergence on Brazil trade and investment flows and also on the policies and initiatives taken by the Brazilian public and private sectors seeking to meet the challenge raised by it. Based on this evidence alternative scenarios of future developments concerning China and its impact on Brazil will be outlined and Brazilian policies considered.

The paper is divided into four sections. The first section describes the effects of China's expanded role in the world economy on trade and investment flows from a Brazilian perspective. The recent boom in Brazilian exports to China, mainly of commodities such as soybeans and iron ore, but also of iron and steel products, is analyzed. Conditions of market access to the Chinese market are considered in the context of China's accession to the WTO. Long-term perspectives for the expansion of per capita consumption in China of products which generate demand for commodities of Brazilian interest are also considered. Dislocation of Brazilian exports to third markets by Chinese competition since the 1990 is scrutinized. The structure of Brazilian imports from China is presented and protection affecting such imports in Mercosur described.

Section 2 examines the complementarity between trade and outward investment flows for Brazil and China. Diversion of foreign direct investment from Brazil to China is briefly considered. The third section focuses on Brazilian policies and China. This includes defensive actions by the Brazilian government to face Chinese imports – antidumping duties and safeguards – and offensive actions by Brazil in China involving bilateral governmental technical cooperation and joint stances in the World Trade Organization. The conclusive section centers on future developments concerning the Chinese economy and how they may effect Brazil and considers policy suggestions to complement what has already been done to face the challenges and exploit opportunities raised by China's increasing role in the world economy.

Two warnings are essential. The first is to stress that this is a paper on how Brazil reacted in the past, and should react in the future, to the emergence of China as a fast growing economy. It is not a paper on how successful Chinese policies can serve as stimuli for Brazil to follow the same path or how can Brazil devise alternative policies based on the Chinese example that would interrupt almost a quarter of century of near stagnation since 1980 with GDP per capita (PPP) increasing at the yearly rate of 0.4% in contrast with 8.3% in China.[2] The second warning is that inevitably, given the scarcity of systematic data on the subject, anecdotal information tends to occupy a more prominent place in this paper than prudence would have normally recommended.

1. Brazil-China: trade

Bilateral trade between Brazil and China has increased significantly since 2000. After many years around 2% of total exports Brazilian exports to China exceeded 6% of total exports in 2003. Imports from China also increased in relative importance although less markedly: from about 2% of total imports in 2000 to about 4.5% in 2003. Seen from the Chinese angle the Brazilian export share of the Chinese market expanded from 0.48% of total exports in 2000 to 1.1% in 2003. The share of exports of Brazil in total Chinese exports remained constant around 0.5% (see Table 1.1).

Table 1.1
Brazil and China: shares in trade flows, 2000-2003, %

	Brazilian trade shares		Chinese trade shares	
	Exports to China in total Exports	Imports from China in total imports	Exports to Brazil in total exports	Imports from Brazil in total imports
2000	1.97	2.19	0.49	0.48
2001	3.27	2.39	0.50	0.78
2002	4.18	3.29	0.48	0.85
2003	6.20	4.45	0.49	1.10

Sources: data from site of Brasil, Ministério do Desenvolvimento, Indústria e Comércio; World Trade Organization, International Trade Statistics 2002; *People's Daily*, January 12, 2004.

[2] World Bank data. Even if criticisms of a persistent overestimation of China's GDP are correct the contrast between the growth performance of both economies remains striking.

Exports to China

Brazilian exports to China have been traditionally concentrated in a few commodities: soybeans, soybean oil, iron ore, iron ore pellets and wood pulp. The market share of this small group of commodities has hovered under two thirds of Brazilian total exports to China. Since 2000, Brazil, as many other economies, has significantly expanded its exports of iron and steel products in a booming Chinese market (see table 1.2). The share of unprocessed products in total exports fell from 68.2% in 2000 to 50% in 2003 while those of semi-manufactured products rose from 13% to 23.8% and of manufactures from 18.8% to 25.9%. [3]

Table 1.2
Brazil: main exports as shares of total exports to China, 2000-2003

	2000	2001	2002	2003
Soybeans	31.1	28.3	32.7	29.0
Soybean oil	2.0	0.3	4.9	5.9
Iron ore	16.2	17.9	16.5	11.5
Iron ore pellets	8.8	7.5	7.2	5.4
Wood pulp	5.0	6.7	4.5	5.9
Iron and steel products	1.2	1.9	4.4	15.8
Other products	35.7	37.4	29.8	26.5

Source: data from site of Brasil, Ministério do Desenvolvimento, Indústria e Comércio.

The Brazilian market share of soybean imports into China has increased significantly since the early 1990s when it was under 10% of total Chinese imports of only US$ 48 million to reach more than a third of the market of about US$ 2.5 billion in 2002. This was mostly at the expense of the US market share while Argentina, the other big supplier, continued to hold about 25% of the market. In 2003 national export data for Brazil and the US indicate that this trend has been reversed: Brazilian exports to China expanded by 59% in value in relation to 2002 while US exports increased 190%. Brazil's market share was reduced to roughly 25% of the Chinese market of about 23 million tons

in 2003. Imports of soy oil are less important and much more volatile than those of soybeans. Of total imports of US$ 369 million in 2002, Argentina supplied two thirds of the total and Brazil one third.

The extraordinary increase in China's soy oil consumption from 0.7 million tons in 1992-93 to 7 million in 2003-04 resulted from a 9-fold growth in the consumption per capita.. There is still ample scope for additional expansion of consumption compared to other Asian consumers of soy oil. China's per capita consumption is only 40% of the South Korean level and 30% of the Taiwan, Province of China level. Imports of soy oil have traditionally been much more volatile than soybean imports. But imports of beans are likely to continue to expand at very high rates. China is reported to be planning to transform its Northeast region (provinces of Heilongjiang, Jilin and Liaoning and the northern region of Inner Mongolia) into the world's largest producer of non-genetically modified high-yielding strains of soybeans over the next five years in a move to compete with foreign beans. But there are doubts about the availability of resources to finance such a project.

The tariff on soybean oil at the date of WTO accession was 63.3% and has been reduced to 3%. Soybean oil exports to China are now subjected to a tariff-rate quota sunset provision under the conditions governing China's accession to the World Trade Organization. The in-quota tariff in the first year of the transitional period, 2002, was 9% for 2.5 million metric tons (out-quota of 48%). This is to be maintained until 2005 with quantities rising to 3.6 million tons with out-quota tariffs falling by 13 percentage points yearly to reach 9% in 2005 and thus turning the tariff-rate quota into a tariff.[4] The share of state-trading enterprises is to fall from 34% in 2002 to 10% in 2005. Other agricultural commodities of potential interest for Brazil are also affected by tariff-rate quotas: corn, sugar and cotton. In all cases trade liberalization commitments are much more modest than those for soya. For corn, whose tariff at the origin was 74%, the TRQ level is to

[3] Puga et al (2004) used a constant market share model to find that between 1995 and 2002 actual export growth was somewhat lower than potential growth and that it was the increased competitiveness of Brazilian exports that compensate for the severe adverse effects of changes in export composition.

increase from 5.9 to 7.2 million tons in 2002-2004 and while the in-quota is held at 1%, the out-quota will fall only from 60% to 40%. The state trading share will fall only modestly from 68% to 60%. For sugar, the initial tariff was 71.6%, and the TRQ level will increase form 1.8 to 1.9 million tons, the in-quota reduced from 20% to 15% and the out-quota held at 50%. The share of state trading will be held at 70%. In the case of cotton, the initial tariff was 61.6%, the TRQ level commitments will increase from 0.82 to 0.89 million metric tons, the in-quota tariff will be held at 33% and the out-quota reduced from 54% to 40%.[5]

A small part of the recent increase in exports to China was due to price effects as commodity prices are recovering their levels of the mid-1990s. Taking the five most important commodity exports to China, price increases between 2002 and 2003 answer for slightly more than US$ 200 million, that is more than 21% of the absolute increase of exports of these commodities (see table 1.3).[6]

Table 1.3
Brazil: prices of commodity exports to China, 1996-2003, US$/ton

	Soybeans	Soybean oil	Iron ore	Iron ore pellets	Wood pulp
1996	287.4	535.2	16.7	32.4	363
1997	297.6	522.7	16.9	32.6	366
1998	234.5	602.9	17.2	32.2	309
1999	179.4	392.7	15.4	27.7	397
2000	189.1	340.9	15.1	27.6	550
2001	168.4	274.8	14.7	29.3	299
2002	199.3	413.3	14.8	28.0	336
2003	215.1	494.2	15.9	29.7	357

The expansion of Brazilian exports in China's market has to a certain extent been a result of contraction in other Brazilian export markets. Table 1.4 shows that China has been importing an increasing share of Brazilian commodity exports. If the 2002 market

[4] Palm oil commitments are identical with the exception of the TRQ level which is due to increase from 2.4 to 3.2 million tons.
[5] See Schedule CLII People's Republic of China, Part I- Most-Favoured-Nation Tariff, Section I – Agricultural Products, Section I-B Tariff Quotas in World Trade Organization (2003) and Lohmar and Skully (2003). There are severe problems affecting the quota allocation process: in 2002 the fill-ins for corn and cotton were only 0.1% and 22% as reported in USTR (2003).

shares had been maintained constant in 2003 about US$ 97 million of Brazilian exports would not have been redirected to China, slightly more than 10% of the export expansion between 2002 and 2003.[7] Thus about one third of the expansion of Brazilian commodity exports to China in 2003 is explained by price increases and export redirection.

Table 1.4
Brazil: share of exports absorbed by China, 2000-2003

	Soybeans	Soybean oil	Iron ore	Iron ore pellets	Wood pulp
2000	15.4	5.7	9.5	7.9	3.5
2001	19.8	0.5	17.7	14.0	10.2
2002	27.2	17.3	20.6	17.6	9.8
2003	30.6	24.6	22.8	20.8	15.4

Chinese imports of iron ore and pellets increased 18.9% yearly between 1992 and 2003. Brazil has been steadily expanding its share of the Chinese market for iron ore. It rose from 19.1% in 1992 to 25.2% in 2002 in an import market of US$ 2.4 billion. Australia lost market share since 1992 but it still supplied 41.8% of Chinese iron ore imports in 2002. Brazilian market share for pellets also rose to about 50% of a total market of about US$ 0.4 billion in 2002. The aggregate (ore and pellets) Brazilian market share increased marginally in 2003 to 27.7% in a total market of 148.1 million tons. Other major suppliers in 2003 were Australia (33.6%) and India (25.1%).

China is already the largest iron ore market for Companhia Vale do Rio Doce (CVRD) which is likely to increase further its market share in the Chinese market. Export revenues in 2004 will reflect a rise of more than 18% in iron ore prices. Worldwide iron ore price negotiations followed custom and started with a CVRD-Arcelor agreement of a 18.6% rise in prices. This was followed by an agreement between CVRD and Shangai Baosteel on an increase of 18.27-18.64 % in the wake of the Australia-Japan deal following the Brazil-Europe deal. CVRD-Baosteel had signed a contract in 2001 for 6 million tons/year, but a new ten-year contract followed suit in December 2003 to reach yearly sales of 14 million tons after 2010. After 2010 CVRD sales to Baosteel will total

[6] Price effects between 2000 and 2003 answered for only 7% of increased Brazilian exports to China.

20 million tons/year. CVRD has been deepening its commercial links in China in many ways. It is reported as considering the purchase of harbor equipment from Zhenhua of Shangai and it maintains an office in Shanghai which provides services for Brazilian small and middle-sized companies interested in the Chinese market.

The Brazilian share in the Chinese market for iron and steel products has been traditionally insignificant: in fact it fell from 1.64% in 1992 (HS class 72) to 0.52% in 2001. In 2002 there was a reversal of the trend as the market share increased to 1.09%. In 2003 Chinese imports of such products increased by an amazing 61% in value but imports originating in Brazil increased by 439% to reach US$ 745 million.[8] Other traditionally less important suppliers of steel products – but larger than Brazil - also expanded their exports significantly: India by 319% to US$ 1.1 billion and Russia by 111% to US$ 1.3 billion. [9]

The unweighted average bound tariff on agricultural products in China is to be reduced from 31.5% before accession to the WTO to 17.4% in 2005. Average tariff on industrial products is to be reduced to 9.4%.[10] Data on 2001 MFN tariff and the bound final tariff in both cases weighted by China's imports are presented in Table 1.5 below. Tariffs affecting products of Brazilian interest other than agricultural products subject to TRQs is not substantial with the exception of all types of meat that are in the 10-25% range. Tariffs on certain types of iron and steel products exceed 15%. TRQs on industrial products are not relevant in the case of Brazil. Non-tariff barriers -- especially obstacles related to national treatment of foreign firms and the role of state trading -- are of paramount importance and are to be gradually dismantled.[11]

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[7] But almost 20% of export expansion between 2000 and 2003.
[8] Brazilian export statistics.
[9] Chinese Customs Statistics, imports, www.tdctrade.com
[10] See Yang (2003), pp. 6-7.
[11] See Shafaeddin (2002), pp. 100-103.

Table 1.5
China: MFN 2001 and bound tariffs after transition following accession, main industrial products, %

	MFN 2001	Bound rate
Beverages and tobacco products	57.8	10.4
Electronic equipment	10.6	2.3
Wood products	10.0	3.4
Paper products	9.3	3.3
Motor vehicles and parts	31.3	14.1
Textiles	20.5	9.4
Machinery and equipment	13.4	6.6
Ferrous metals	9.1	5.2
Chemical, rubber, plastic products	14.1	8.1
Metals nec	7.0	4.2
Wearing apparel	23.8	14.9
Transport equipment nec	5.0	3.6
Metal products	9.7	7.4
Manufactures nec	19.5	15.8
All goods	13.7	5.7

Source: Shafaeddin (2002), Table 3.

Brazil's initial negotiating rights in the tariff negotiations leading to the accession of China to the World Trade Organization included soybean oil and its fractions (8-digit lines in HS 1507), palm oil and its fractions (lines in HS1511), rape, colza and mustard oil (lines in HS 1514), cane or beet sugar and chemically pure sucrose (lines in HS 1701) and orange juice: frozen (HS 20091100). In the negotiations on tariff quotas Brazil's initial negotiating rights included soybean oil, palm oil, rape seed oil and sugar. Brazil has not entered reservations under article 17 of WTO's Protocol on the Accession of the People's Republic of China.[12]

Sustainability of Chinese demand of commodities and new opportunities

The recent boom in bilateral Brazil-China trade has underlined the importance of logistical problems as a barrier to trade expansion, especially so in trade surge situations and when bulk cargos are such an important element of trade flows. It has been reported

[12] See WTO (2003).

by spot exporters of iron ore pellets to China that freight rates have trebled in the recent months and are equal to the value of exports.

With the exception of iron and steel products it is unlikely that present Brazilian exports to China will be affected by increased supply response in China as all of them are natural resources-based.[13] Chinese steel demand rose 21.7% in 2003 to 257 million tons while output lagged at 210 million tons. The surge in Brazilian steel exports to China which reached about 17% of total steel exports is a result of such a trend. But not only these exports are forecast to disappear in the near future but it is a well accepted fact in the steel industry that China will become a major steel exporter by 2010 and pose a major threat to present producers. Chinese steel output doubled from 100 to 200 million tons between 1998 and 2004, and additional capacity of 50 million tons will come on line in 2005. The Chinese domestic market for steel is unlikely to be saturated until well into the 2010s. If the 1989-2002 rate of growth of steel consumption is maintained until the end of the decade China's level of per capita steel consumption will reach 350 kg per capita per year compared to 450 in the European Union, 400 in NAFTA and 650 in Japan. A slightly more moderate rate of growth of consumption -- 7.5% yearly instead of 10.2% -- would rise consumption per capita to 300 kg.

Among big present steel producers, Brazil is the only major supplier of iron ore to world markets and China's steel industry is likely to continue to depend on high grade iron ore imports. Demand of imported iron ore and pellets in 2004 is estimated to increase by 35%.[14] Chinese steel producers are also planning to invest in Brazil as will be discussed below when considering Brazil, China and FDI flows.

Other exports are thought to have a potential for growth. This includes traditional agricultural products as beef, poultry, pork meat and orange juice, and also transport equipment and software. Beef and poultry per capita consumption in China have increased at yearly rates approaching 5% in the 1985-2003 period while pork per capita

[13] It should be note, however, that Brazil and other traditional suppliers of woodpulp as Canada and the US are being displaced by new suppliers such as Indonesia, Russia and Thailand.
[14] Estimate of the Iron and Steel Statistics Bureau.

consumption expanded at 4% yearly. Fatter cuts of pork have been substituted by leaner cuts. But on the whole China has been able to supply its own needs of all these types of meats and the shares of imports in total consumption are negligible.[15] There have been claims that Brazilian meat exports were affected by sanitary barriers in the past.[16] These have been recently removed and a consortium of Brazilian meatpackers signed a first contract with the China Animal Husbandry Group and is hoping to supply US$ 100 million in 2004. Expansion of orange juice exports depends on growth of a rather limited present market. Brazilian ethanol exports may be significantly affected by the expansion of Chinese imports even if in roundabout way. If Brazilian ethanol exports to the US enjoyed improved market access, US corn could be diverted to China instead of being used in a less efficient way to produce ethanol in the US.[17]

Dislocation of Brazilian exports by Chinese competition

The contrast between the export performances of Brazil and China between 1990 and 2003 is striking. For instance, China increased its market share in the US market from 3.1% to 10.1% while the Brazilian market share declined from 1.6% to 1.2%. Since 1990 Brazilian exports have been dislocated in all world markets by Chinese exports. Moreira (2004) has shown that at the 5-digit SITC level Brazilian exports contracted between 1990 and 2001 by US$ 1,530 million – 4% of total exports in 2002 – due to the increased importance of China in world markets.[18] Losses were particularly heavy in East Asian markets (14.5% of 2002 total exports to these markets) and least important in the Latin America (2.6%). See Figure 1.1 for such losses for four categories corresponding to high (1HT), mid-range (2MT) and low (3LT) technological content as well as resource-based exports both in absolute terms and as a proportion of 2002 exports.

[15] Data from United States Department of Agriculture, Foreign Agricultural Service, Country pages, www.fsa.usda.gov and Xiangjin and Jarratt (1998).
[16] See USTR (2003), pp. 46-7 for a reference to China's declaration of zero tolerance for pathogens in imports of poultry and other types of meat. This was deemed to be scientifically unjustifiable by suppliers.
[17] Marcos Jank is thanked for this information.
[18] Brazilian export market shares in 1990 and 2001 are compared. Brazil loss of exports due to a reduction in market share is distributed among the shares of countries that gained market share in the relevant market. The estimate of loss due to Chinese products is the Brazilian export loss by product multiplied by the Chinese share of total gains for this product in the same period.

Loss in exports of low technology products was more significant in relative terms. Absolute export losses exceeding US$ 20 million affected a wide range of products. High technology goods such as calculating machines, electric apparatuses for line telephony and parts for office machines and automatic data-processing machines. Mid-range products: radio broadcast receivers for motor vehicles, ships (other vessels etc), ferro-silicon, air conditioning equipment, insulated electrical wires, electric smoothing irons, excavating equipment, coils, and sewing machines. Products with low technological content included textile products undergarments and wire rods. Resource-based products included inorganic chemicals and tin and tin alloys.[19]

Moreira (2004) also presents evidence on the similarity of export structures of China and Brazil. The coefficient of correlation for export composition for Brazil and China in the United States market has fallen from 0.5 in 1992 to 0.2 in 2001 (HS 6 digit aggregation) and has hovered around 0.1 for the rest of the world. The results are similar for both all trade and manufactures. Direct competition between China and Brazil in third markets seems thus to be declining in importance.

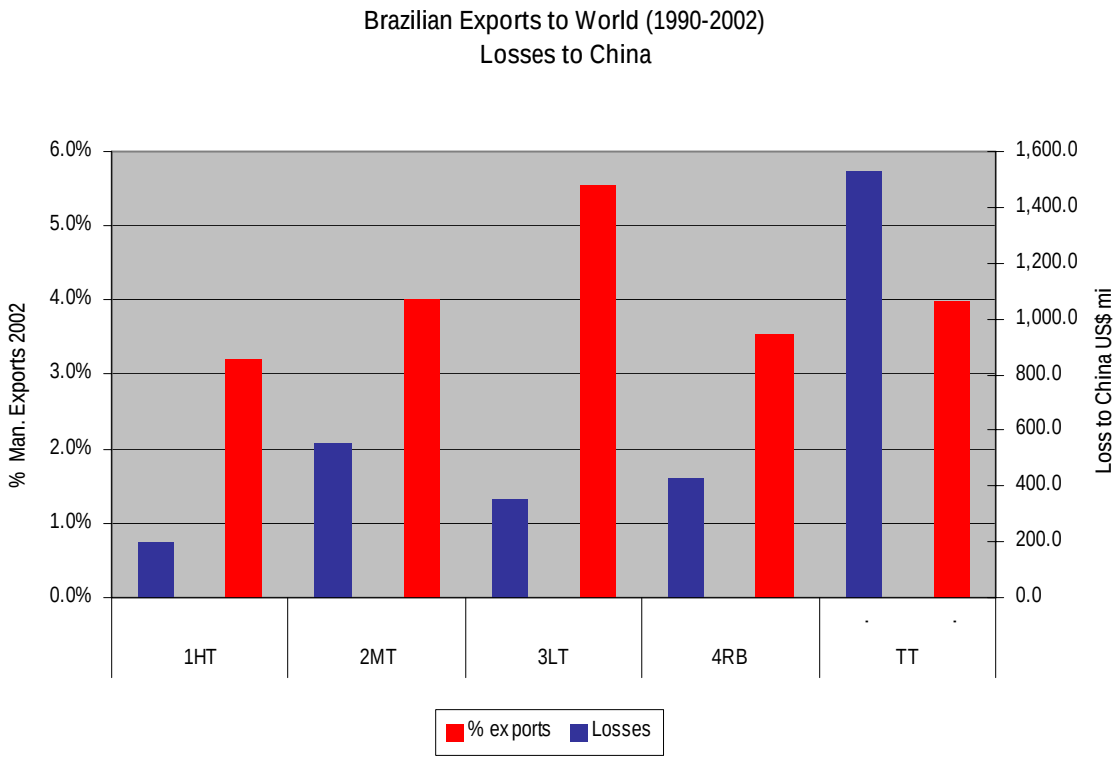
Imports from China

Brazilian imports from China have been concentrated on a few products that do not include textiles, clothing or footwear (see table 1.6 for shares in total imports from China). The most important are coal and coke, organic chemicals, machinery and electrical machinery, equipment and parts. Coal and coke imports from China are displacing imports from Australia and are explained by the logistical opportunities created by return freights since much of the Brazilian export trade to China – and elsewhere in Asia – is of bulk commodities as iron ore, soybeans and steel products. Total

[19] For the US market, using data at 6-digit in the Harmonized System for 1990-2003, estimates of the dislocation of Brazilian exports by Chinese exports an yearly basis show that it has peaked since 2001 in relation to all other years in 1990-2000 with the exception of 1997-98, just before the big Brazilian devaluation of 1999. Estimates of losses using this more disaggregated data set yields much higher estimates than using the 5-digit SITC.: an absolute trade loss of US$ 1,801 millions in the US market compared to US$ 530 million in the 5-digit exercise.

weight of Brazilian exports to China in 2003 was 52.4 million tons contrasted with only 4.8 million tons of imports.

Figure 1.1



Source: Moreira (2004).

In all more significant products China's imports are rapidly gaining market share in Brazil even while Brazilian imports shrink (table 1.7).[20] By far the more significant expansion has been in HS chapter 85, especially in headings concerning parts for consumer electronic products (radio and television), mainly displacing imports from the United States and Japan. Table 1.8 includes the relevant data.

[20] Little is known about the importance of smuggled Chinese textile products in the Brazilian market. Evidence on other Latin American economies suggests that this may be very significant. See Arellano (2004), p. 23.

Table 1.6
Share of specific imports (HS) in total Brazilian imports from China, 2001-2003

	2001	2002	2003
Coal and coke (2701 & 2704)	9.1	12.9	14.2
Inorganic chemicals (28)	2.6	2.1	2.3
Organic chemicals (29)	10.8	10.7	10.1
Man made filaments and fibers (54 & 55)	0.8	2.1	4.3
Apparel and clothing (61, 62 & 63)	4.8	2.9	2.2
Footwear (64)	1.4	1.7	1.0
Nuclear reactors, machinery and mechanisms (84)	13.7	10.6	10.0
Electrical machinery and equipment and parts (85)	28.6	29.3	33.0
Optical, photographic etc (90)	5.0	6.0	6.2
Toys, games etc (95)	3.5	2.3	1.5
Other products	19.7	19.4	15.2

Table 1.7
Brazil: shares of imports from China in total imports for selected Harmonized System chapters and headings (4 digits), 2001-2003

	Value of total imports 2003 US$ million	2001	2002	2003
Coal and coke (2701 & 2704)	950	17.3	25.3	32.0
Inorganic chemicals (28)	696	7.0	5.2	16.1
Organic chemicals (29)	3108	4.3	5.6	7.0
Man made filaments and fibers (54 & 55)	570	1.7	5.5	16.1
Apparel and clothing (61, 62 & 63)	117	40.5	34.9	35.8
Footwear (64)	54	59.2	54.0	31.6
Nuclear reactors, machinery and mechanisms (84)	7787	1.9	2.0	2.8
Electrical machinery and equipment and parts (85)	6771	3.9	6.5	10.5
Optical, photographic etc (90)	1812	3.1	5.1	7.4
Toys, games etc (95)	53	60.4	55.6	59.5

Table 1.8
Brazil: shares of imports from China in total imports, SH 3-digit and headings, 2001-2003

	Value of total imports 2003 US$ million	2001	2002	2003
85	6771	3.9	6.5	10.5
850	1342	3.0	3.1	7.5
851	676	3.3	7.9	12.6
8519 Microphones, loudspeakers	7	20.0	50.0	42.9
852	1299	5.4	13.4	21.6
8520 Magnetic tape recorders etc	6	0.0	0.0	0.0
8521 Video recording or reproducing apparatus	15	3.7	10.0	40.0
8522 Parts for 8519 to 8521	91	16.1	46.9	56.0
8523 Prepared unrecorded media for sound recording	21	6.5	7.1	9.5
8524 Records, tapes and other recorded	18	0.0	0.0	0.0
8525 Transmission apparatus for radiotelephony	229	0.6	0.9	5.2
8526 Radar and radio navigation apparatus	94	0.0	0.6	1.1
8527 Reception apparatus for radiotelephony	76	23.8	34.3	42.1
8528 Reception apparatus for television	13	7.7	8.0	15.3
8529 Parts for 8525 to 8528	737	7.0	16.7	23.7
853	1124	7.5	6.1	7.4
854	2330	2.4	4.7	6.8

The available data on hourly compensation including fringe benefits for the textile and apparel industries in 2002 suggest that its level in Mexico exceeded that in China by factors of 3.33 and 2.78, respectively, in coastal areas and 5.61 and 3.6, respectively, in other areas.[21] No directly comparable data exist for Brazil, but other sources on hourly compensation costs in manufacturing as a whole, also for 2002, indicate an average level in Brazil 8% above such costs in Mexico.[22] It is not unreasonable to think of wages in Brazil at a level about three times those in (coastal) China. In consumer electronics productivity in Brazil is about 60% above levels in Mexico and China so that the sector in

[21] USITC (2004), p. 3-7, quoting Werner International Management Consultants (2002) and Jassin-O'Rourke Group (2002).

a better position to face competition from Chinese imports but in other sectors a potential surge in imports from China cannot be dismissed as Brazilian labor productivity is much lower. The automotive sector is a good example as Brazilian labor productivity in only about 50% that of Mexico due to massive overinvestment after 1995 and high taxation. China can improve its very low labor productivity (one third of Mexico's) very rapidly in a scenario where domestic prices are reduced and economies of scale adequately exploited.[23]

The level of protection faced by imports from China in the Brazilian (Mercosur) market is relatively high but with a low coefficient of variation. Most of the electronic parts and components are imported by producers installed in the Manaus free Trade Zone and are thus exempted not only of custom duties but also of all Federal state and municipal taxes (see Tables 1.9 and 1.10). [24]

By the terms of China's accession to the WTO it will be legal for other members to apply two specific safeguards. A transitional product-specific safeguard mechanism can be applied to Chinese products and it can be invoked if there is "market disruption or threat of market disruption rather than the more stringent injury test included in the agreement on safeguards which requires 'serious injury or threat of serious injury". It can also be used in case a safeguard applied by a given country diverts Chinese exports to a third country. The measure can be applied for 12 years after China's accession. Safeguards, also based on rather loosely defined market disruption rather than on injury, can be applied to China's textile and apparel exports until the end of 2008. In antidumping processes prices in third countries may be used as China is classified as a non-market economy where prices are not freely determined in the market.[25]

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[22] United States Bureau of Labor Statistics data.
[23] See in McKinsey & Company (2003) the analyses of the auto and consumer electronics sectors.
[24] See WTO (2000), pp. 69-70.
[25] See Yang (2003), p.8 and Shafaeddin (2002), p.99. Some WTO members entered reservations concerning restrictive measures affecting Chinese imports into their markets. Conditions of phasing out vary. See WTO (2001).

2. Brazil-China: foreign direct investment

FDI flows are often complementary to trade. FDI can be explained by import substitution as was often the case in Latin America where former suppliers abroad often

Table 1.9
Brazil: tariffs, standard deviations and coefficients of variation on main imports from China in total imports, HS 4-digit and headings

	Mean	Standard deviation	Coefficient of variation
Coal and coke (2701)	0	0	n.a.
Coke (2704)	0	0	n.a.
Inorganic chemicals (28)	7.0	3.9	0.56
Organic chemicals (29)	7.8	5.3	0.68
Man made filaments and fibers (54)	17.3	4.2	0.24
Man made filaments and fibers (55)	17.5	4.0	0.23
Apparel and clothing (61)	21.5	0	0
Apparel and clothing (62)	21.5	0	0
Apparel and clothing (63)	20.8	2.5	0.12
Footwear (64)	21.7	1.6	0.07
Nuclear reactors, machinery and mechanisms (84)	13.1	6.5	0.50
Electrical machinery and equipment and parts (85)	14.8	7.0	0.47
Optical, photographic etc (90)	12.6	7.4	0.59
Toys, games etc (95)	20.9	0.7	0.03

Source: FTAA Hemispheric Data Base.

Table 1.10
Brazil: tariffs on main electronic goods imports from China, HS 4-digit

	Mean	Standard deviation	Coefficient of variation
8519 Microphones, loudspeakers	21.5	0	0
8520 Magnetic tape recorders etc	18.8	7.6	0.40
8521 Video recording or reproducing apparatus	10.8	11.8	1.09
8522 Parts for 8519 to 8521	17.8	0.8	0.04
8523 Prepared unrecorded media for sound recording	15.9	5.1	0.32
8524 Records, tapes and other recorded	17.5	0	0
8525 Transmission apparatus for radiotelephony	11.1	8.9	0.80
8526 Radar and radio navigation apparatus	6.0	10.4	1.73
8527 Reception apparatus for radiotelephony	20.4	4.3	0.21
8528 Reception apparatus for television	19.9	3.1	0.16
8529 Parts for 8525 to 8528	12.7	7.6	0.60

Source: FTAA Hemispheric Data Base.

joined efforts with importers to create domestic productive capacity. But FDI can also be export-oriented and related to the development of raw material supply as in the typical enclave mining economies. More recently, in a global economy, FDI in manufacture production may be partially or even fully export-oriented. Recent experience in Brazil and China provides varied examples of different inducements to FDI.

Complementarity between trade and outward investment flows: FDI by Brazil

Total inward FDI stock in China at the end of 2002 was of US$ 447.9 billion.[26] . The stock of Brazilian foreign direct investment in China is very limited: in 2001 it was US$ 15 million, falling to 13 US$ million in 2003 (out of a total stock of Brazilian outward FDI of US$ 43.4 billion). There have been some additional export-related Brazilian investments in China in 2003 of which the most important was the Embraer-Hafei factory in Harbin. Sabó, a manufacturer of automotive parts, and Marcopolo, a producer of bodies for buses, both with a worldwide manufacturing presence have shown interest in investing in China. [27]

A pioneer Brazilian-related investment in China was in the production of hermetically sealed compressors. Brasmotor S.A. started exporting to China in 1986 when it maintained a partnership with the Whirlpool Corporation. In 1997, Whirlpool acquired a majority position in Brasmotor. Embraco Snowflake is a joint venture established in 1995 between Embraco and the Beijing Snowflake Electric Appliance group. It produces 1.7 million compressors yearly (about 12% of the Chinese market) and is expanding production to 3.7 million units. Embraco's headquarters and main factory are in Joinville, Santa Catarina, in the southern region of Brazil. There are other Embraco factories worldwide as well as a business office in the United States. It is interesting to note that Embraco has been repeatedly mentioned in the Brazilian press in recent months as an example of a Brazilian firm with a presence in China without any mention that it is controlled by US capital although with headquarters in Brazil.

[26] UNCTAD (2003), Annex Table B.3.
[27] See in the site of Banco Central do Brasil the information on Capitais Brasileiros no Exterior for 2001 and 2002.

Other Brazilian subsidiaries of multinational companies are present in the Chinese market. Voith Siemens is since 1996 associated with Shangai Electric to produce turbines and generators for the Chinese market. Castings have been imported from Brazil. Voith Siemens has formed with GE Canada and Chinese Donfang a consortium to supply equipment to the Three Gorges power station. Two generators and two turbines are to be produced in Brazil at a cost of US$ 47 million.

Perhaps the emblematic case showing the new possibilities for Brazilian investment in China has been that of Embraer, the successful Brazilian producer of commercial regional jets, which entered into a 51-49% joint venture with Harbin Aircraft Industry and Hafei Aviation Industry both controlled by China Aviation Industry Corporation II to produce the Embraer RJ145 regional jet for 50 passengers in Harbin, Heilogjang province, in Northern China. The first plane produced by Embraer in China had its first test flight in December 2003. The total investment involved is of US$ 50 million and the factory is planned for an output of 24 jets yearly. Harbin Embraer won a first contract to supply 6 airplanes to China Southern Airlines. Embraer estimates a Chinese market for 650 commercial jets of less than 120 seats in the next 20 years. There is competition from other entrants: state-owned China Aviation Industry AVIC I announced in December 2003 that it had received a total order of 35 jets for a planned regional jet, the ARJ-21, which will compete with the RJ 145 jets produced in Harbin.

Complementarity between trade and outward investment flows: FDI by China

There are a few examples of FDI by Chinese firms in Brazil especially in the production telecommunications equipment and consumers electronic products (see Table 2.1). Much more important are export-oriented FDI projects and prominently the proposed CVRD-Arcelor-Baosteel steel mill in Northern Brazil. Of the total stock of outward FDI by China at the end of 2002 of US$ 35.5 billion only around US$ 75 million were invested in Brazil.[28]

[28] UNCTAD (2003), Annex Table B.4. In 2003 this has reached US$ 90 million.

Table 2.1
China: stocks and flows of direct investment in Brazil, US$ million

	Stocks		Flows	
	1995	2000	2001	2002
Agriculture and livestock	0.4	0	n.a.	n.a.
Industry	0.6	22.4	n.a.	n.a.
Scientific instruments	0.5	0	n.a.	n.a.
Food and beverages	0	5.5	n.a.	n.a.
Wood	0	14.9	n.a.	n.a.
Machinery	0	1.8	n.a.	n.a.
Electronic and telecomm. equipment	0	0.2	n.a.	n.a.
Services	26.9	15.3	n.a.	n.a.
Vehicle commercialization	2.1	0	n.a.	n.a.
Wholesale	15.1	10.1	n.a.	n.a.
Retail trade	5.8	3.0	n.a.	n.a.
Informatics-related services	0	0.2	n.a.	n.a.
Services to industries	3.9	2.0	n.a.	n.a.
Total	27.9	37.7	28.1	9.7

Source: Banco Central do Brasil, Investimentos Diretos, Distribuição por país de origem dos recursos.

Huawei Technologies has won several contracts to supply telecommunications equipment in Brazil (access to fixed telephony networks and mobile commutation stations, optical data transmission solutions and added value services). Sales trebled in 2003 to US$ 50 million and it is investing US$ 25 million in a new plant in Campinas. ZTE, another big Chinese producer of telecoms equipment, has invested US$ 3 million in Barueri, São Paulo, and is planning to invest a further US$ 10 million until 2006. China's TCL Corporation, the largest world producer of TV sets, after its association with Thompson, is entering the Brazilian market in 2004 through a joint venture to produce TV sets, computer monitors and DVD players in the Free Zone of Manaus in Northern Brazil. SVA, another Chinese producer of consumer electronics which started to export significantly to Brazil in 2003 also announced investment plans. There are also reports of interest by Chinese firms to invest in other industrial sectors such as pharmaceuticals.

The few present investments are to be dwarfed by planned future investments in the steel industry. Shangai Baosteel, China's biggest steelmaker, Arcelor, the world's biggest steelmaker, and CVRD, Companhia Vale do Rio Doce, world's largest iron ore producer, are going ahead with the feasibility study of a project for an integrated steel mill to produce 3.7 million tons of slabs yearly in its first stage and involving an investment of US$ 1.0-1.4 billion. The plant is to be located in Itaqui in the Northern state of Maranhão and will start producing in 2007 or 2008. This shall be China's largest investment overseas. A second mill will be constructed, to produce cold-rolled steel depending on future demand. This will involve an additional investment of US$ 1 billion. CVRD, besides supplying the iron ore from Carajás, will have a share of around 20% in the new investment. Estimated yearly steel exports are in the US$ 750 million-US$ 1 billion range. Part of the exports are apparently targeted to the US market where a fair number of domestic producers will have to close down capacity due the high cost required to overhaul their aged blast furnaces. CVRD and Arcelor are already partners in Companhia Siderúrgica de Tubarão-CST, a world leader in the production of slabs, which is expanding capacity from 4.64 million tons to 7.5 million yearly.

Another joint venture between Chinese FDI and CVRD is being considered but has been facing opposition of environmental authorities in Northern Brazil. This would include an investment of US$ 1 billion by the China Aluminum Group and CVRD in a 1.8 million ton alumina plant coupled with another joint venture to process alumina into aluminum in China. In the recent Brazilian presidential visit to China there were indications that Chinese FDI may be attracted by infrastructure projects in Brazil related to agricultural exports and energy. But it remains to be seen whether this preliminary interest will be transformed into concrete investment.

It is not simple to address any question related to FDI diversion affecting Brazil as the answer is bound to vary significantly depending on the choice of the period of reference. FDI inflows into Brazil were dramatically reduced in the 1980s as macroeconomic instability prevailed and only started to recover after 1992 with success of the stabilization program. FDI then entered massively, reaching a peak of around US$

30 billion (Brazilian statistics) in 2000. Most of this inflow was related to successive waves of a significant privatization effort which affected first industrial input producers (steel, petrochemicals) and then providers of public services (telecoms, electricity). Inflows of FDI in manufacturing remained rather low and only increased after the big devaluation in the beginning of 1999 (see tables 2.2 and 2.3). Table 2.4 shows the origin of FDI in Brazil since the mid-1990s.

Table 2.2
Brazil: FDI stocks. 1990-1995, US$ billion

	Total	Manufacturing industry					
			Food and beverages	Chemicals	Machinery	Electrical, electronic and telecom products and equipment	Motor vehicles and parts production
1990	37.2	25.7	1.8	5.1	3.0	3.1	3.6
1991	38.6	26.2	1.8	5.1	3.1	3.2	3.4
1992	40.0	25.6	2.0	5.2	2.9	3.2	3.3
1993	47.0	27.3	2.0	5.3	2.9	3.2	4.9
1994	56.5	29.0	2.1	5.5	3.1	3.4	5.3
1995**	58.1	30.9	2.3	5.6	3.3	3.7	5.7

*End of June.
Source: Banco Central do Brasil, Investimento Estrangeiro Direto.

Table 2.3
Brazil: FDI stocks and flows, 1995-2003*, US$ billion

	Total stock	Flows								
		Total	Agriculture	Industry						Services
				Total	Food and beverages	Chemicals	Machinery	Electrical, electronic and telecoms products	Motor vehicles	
1995	41.7									
1996		7.7	0.1	1.7	0.2	0.2	0.2	0.1	0.3	5.8
1997		15.3	0.5	2.0	0.3	0.4	0.2	0.3	0.2	12.8
1998		23.3	0.1	2.8	0.1	0.4	0.2	0.4	1.1	20.4
1999		27.6	0.4	7.0	1.2	1.3	0.1	0.8	1.8	20.1
2000	103.0	29.9	0.6	5.1	1.0	1.1	0.6	0.8	1.0	24.2
2001		21.0	1.5	7.0	0.6	1.5	0.3	1.5	1.6	12.5
2002		18.8	0.6	7.6	1.9	1.6	0.4	0.9	1.8	10.6
2003		12.9	1.5	4.5	0.4	0.9	0.3	0.5	1.0	6.9

*End of year.
Source: Banco Central do Brasil, Investimento Estrangeiro Direto.

Table 2.4
Brazil: FDI origin, 1995-2002, US$ billion

Country of origin	Total stock 2000	Flows							
		1996	1997	1998	1999	2000	2001	2002	2003
Canada	2.0	0.1	0.1	0.3	0.4	0.2	0.4	1.0	0.1
France	6.9	1.0	1.2	1.8	2.0	1.9	1.9	1.8	0.8
Germany	5.1	0.2	0.2	0.4	0.5	0.4	1.1	0.6	0.5
Italy	2.5	0	0.1	0.6	0.4	0.5	0.3	0.5	0.4
Japan	2.5	0.2	0.3	0.3	0.3	0.4	0.8	0.5	1.4
Netherlands	11.1	0.6	1.5	3.4	2.0	2.2	1.9	3.4	1.4
Portugal	4.5	0.2	0.7	1.8	2.4	2.5	1.7	1.0	0.2
Spain	12.3	0.6	0.5	5.1	5.7	9.6	2.7	0.6	0.7
Switzerland	2.3	0.1	0.1	0.2	0.4	0.3	0.2	0.3	0.3
United States	24.5	2.0	4.4	4.7	8.1	5.4	4.5	2.6	2.4
Uruguay	2.1	0.1	0.1	0.1	0	0.2	0.2	0.2	0.2
Other	27.2	2.6	6.1	4.6	5.4	6.3	5.3	6.3	4.5
Total	103.0	7.7	15.3	23.3	27.6	29.9	21.0	18.8	12.9

To the extent that FDI in Brazil is mostly geared to the domestic or sub-regional markets it is unlikely that it will be significantly affected by investment diversion favoring China in the mid-term. Relatively small trade effects imply relatively small FDI effects. The strongest candidate to diversion in the short-term is FDI in the automotive sector as the previous wave of FDI in Brazil in the late 1990s and early 2000s led to idle capacity exceeding 40% in 2003. It is no surprise that the present vintage of FDI in the sector is skipping Brazil as a destination. Beyond the mid-term, FDI in other sectors in Brazil may be vulnerable to diversion in favor of China. But indices of FDI source- or sector- coincidence of between China and Brazil are relatively small.[29] On the other hand, as already noted, the fast sustained expansion of the Chinese economy would attract FDI related to resource-based projects geared to supply raw materials and food to China.

Brazil has been losing positions in the rank of FDI Confidence Index prepared by AT Kearney. It was second in 1998 (China 3rd), fourth in 1999 (China 2nd) and 2000

[29] See OECD and United States Department of Commerce Bureau of Economic Analysis studies as quoted in the Task Force Report.

(China 3rd), third in 2001 (China 2nd), fell to 13th in 2002 amid increasing political uncertainty (China 1st), and recovered to ninth in September 2003 (China 1st). In this latter date Brazil had been overtaken in the Kearney rank by four developing economies besides China: Mexico (3rd), Poland (4th), India (6th) and Russia (8th).[30] China's major attractiveness advantages in relation to Brazil in 2003 concerned market size, financial/economic stability, production/labor costs, access to export markets, availability of M&A targets, competitor presence, tax regime and political and social stability. Its disadvantages concerned transparency, quality of life and, by a small margin, infrastructure.

The best possible defense against FDI diversion lies in deepening of sound macroeconomic policies to make possible a reduction in the costs of financing the public debt, a major additional effort to cut public expenditure, and in the adoption of policies able to correct major market failures which unfavorably affect the competitiveness of Brazilian industry. These involve a wide spectrum of markets and issues that cover from long-term finance to the ability to enhance the adoption of innovative technologies. There has been an attempt to put in place selective industrial policies favoring four sectors (pharmaceuticals, semiconductors, software and capital goods) but specific instruments to be used in addition to those which already exist have not been detailed.[31]

It is somewhat surprising that contrasts between Brazil and China involving variables which would appear to be relevant to explain long term economic growth tend to be modest. This is clearly shown by the set of data amassed in the 2004 Knowledge Assessment Methodology undertaken by the World Bank. In a synthetic analysis Brazil dominates China in each of the four knowledge economy pillars: economic incentive and institutional regime, education, innovation, and information communications & technology. In a more detailed comparison, China's performance is better than that of Brazil essentially in average years of schooling and investment in telecoms as well as in many innovation variables: gross FDI as a % of GDP, researchers in R&D, total R&D

[30] See AT Kearney (2003), pp. 35 and ff.
[31] See Brasil (2003).

expenditure as a % of GNP, university-company research collaboration, scientific and technical journal papers, royalty and license fees payments , science and engineering enrollment as a % of tertiary level students, researchers in R&D per capita, manufactured trade as a % of GDP. Most of the contrast in GDP growth performance of course is explained by the sharp contrast in gross investment as a share of GDP (roughly 40% in China and 20% in Brazil) in the last couple of decades.[32]

3. Brazilian policies and China

Defensive actions: facing China in the Brazilian market

Since 1989 Brazil has become an important user of "contingency" measures such as antidumping and safeguard measures. This became particularly significant after Brazil abandoned its long standing discretionary system of important licensing under the balance of payments provisions of the General Agreement on Tariffs and Trade (Article XVIII:B) which was traditionally applied with considerable laxity. But, as will be shown in the next paragraphs, the effect on imports from China was not important, with exception of antidumping measures on garlic and safeguard measures on toys. These products are already protected by Common External Tariff of Mercosur ad valorem rates of 14% and 20%. Potential imports from China without such measures are unlikely to much above US$ 50 million for each product.

Antidumping

If the number of definitive antidumping measures applied by Brazil is taken as an indication of discretionary protection China tops the list. Since Brazil started to apply such measures in 1988, of the total 101 definitive measures 20 were against China. The second most affected economy was the United States with 11 measures (see table 3.1 below). In number of initiations of investigations China is the second most affected economy with 30, compared to 33 for the US. The number of definitive measures against

[32] For detailed data and methodological notes see info.worldbank.org/etools/kam 2004.

Chinese products peaked in 1998, when Brazilian producers were under pressure due to overvaluation of the Real, and have been recently rising again.

Standard literature on antidumping measures focuses on the number of actions. But this is unsatisfactory as specific products affected may represent a reduced share of imports. Indeed, the first impression on the effects of Brazilian policies – that Chinese products are particularly targeted by discretionary protectionist measures if compared to imports from other origins – is put in perspective by closer analysis of the value of imports of products affected before and after AD measures are adopted (see table 3.2 below).

Import values affected before the adoption of measures are very small, even if compared to the modest total value of Brazilian imports from China of US$ 2.1 billions in 2003 (and, after 1994, below US$ 1 billion only in 1999). The only products listed in table 2.2 whose total imports into Brazil exceeded US$ 10 million in 2003 are garlic (US$ 43.2 million) and high-speed steel drills (US$ 12.6 million). It is true, however, that garlic total imports have been much more substantial in the past, reaching a peak of US$ 113.5 million in 1997. Pencil total imports have exceeded US$10 million in 2001 but have dwindled since then. Otherwise Brazilian antidumping measures have only affected a small number of manufactured products of limited significance.

Safeguards

Safeguards have affected Brazilian imports of toys since 1996. They were initially equivalent to a 50 % addition to Mercosur's Common External Tariff of 20%.[33] After 1996 the surtax was adjusted so as not to exceed the bound tariff Uruguay Round tariff: to the CET of 20% were added surtaxes of 43%, 29% and 15% in 1997-1999.[34] In 1999 these safeguards were extended for four years with additional import duties of 14% in 2000 falling by 1% yearly to reach 11% in 2003.[35] This has been recently extended to

[33] See World Trade Organization, Committee on Safeguards, S/SG/N/7/BRA/1, 12 July 1996.
[34] See World Trade Organization (2000), p. 47.
[35] See World Trade Organization, Committee on Safeguards, G/SG/N/8/BRA/2, S/SG/N/10/BRA/2, 2 December 1999.

cover the January 2004-June 2006 period with the surcharge falling from 10% in 2004 to 9% in 2005 and 8% in the first semester of 2006. The sum of CET rates and safeguard surcharges will remain below Brazil's binding of 35% for manufactured imports.[36] Imports of toys had increased very rapidly in 1994-95 to reach US$ 139.6 million in 1995 and China had a share of 54% of such imports. In 2002, when the CET plus safeguard was of 30%, total toy imports been reduced to US$ 33.4 million.

Table 3.1
Brazil: antidumping measures by origin of imports affected, 1988-2003

	China	United States	European Union	Other economies	Total
Definitive measures*	20	11	2	68	101
1988-1993	2	5	0	15	22
1994	0	0	0	4	4
1995	2	0	0	1	3
1996	1	0	0	5	6
1997	1	0	0	1	2
1998	5	2	0	13	20
1999	2	1	0	2	5
2000	0	1	0	8	9
2001	3	1	1	12	17
2002	0	1	1	3	5
2003	4	0	0	4	8
Investigations*	30	33	3	133	199
1988-1993	3	12	0	35	50
1994	3	2	0	6	11
1995	0	0	0	5	5
1996	2	3	0	12	17
1997	4	2	0	9	15
1998	3	4	0	15	22
1999	0	2	1	15	18
2000	2	1	0	7	10
2001	4	2	1	11	18
2002	4	2	0	10	16
2003	5	3	1	8	17

* Including revisions and price agreements. At the end of 2003 there were three pending investigations on the revision of antidumping measures affecting products originating in China: barium carbonate, high speed steel drills and permanent magnets. Other economies include European Union members until 1999.

[36] See World Trade Organization, Committee on Safeguards, G/SG/N/8 /BRA/2/Suppl. 2, G/SG/N/10/BRA/2/Suppl. 2, G/SG/N/11/BRA/2/Suppl. 2, 19 December 2003

Sources: Brazil (1998), Brazil (2002) and the site of Ministério do Desenvolvimento, Indústria e Comércio Exterior (www.mdic.gov.br).

Offensive actions

Brazilian offensive trade initiatives in China have been remarkably modest in the past. In 2002, after 14 years without any trade promotion initiative in the Chinese market, a high-level Brazilian trade mission visited China. At the same time a Brazilian trade fair promoted by the Brazil-China Chamber of Commerce took place in Shanghai. Brazilian ministers have visited China frequently since a new administration took office in Brazil. This effort was crowned by President Lula da Silva's visit in May 2004, a move seen as a further step in the deepening of political and economic ties between the two countries that had started during the Cardoso administration. Many of the FDI projects reported above were commemorated and the government announced plans to further deepen economic and political links between Brazil and China. Bank of Brazil is to open a new office in Shangai. A new trade promotion office will be opened also in Shanghai. China is only the second country after the United States where Brazil will have more than one trade promotion office.

Bilateral governmental technical cooperation

Among many reports about enhanced cooperation between Brazil and China there were speculations in 2002 and 2003 of cooperation between China and Brazil on the definition of a common standard of digital television but there were few concrete steps to follow declarations of intention in the Brazilian side. Experts consider it likely that, if such a cooperation becomes a fact, it will result in the adoption by Brazil of the Chinese standard given the disparity between the respective markets for television sets (25 million sets/year in China compared to 5 million/year in Brazil).

The most important channel of cooperation between Brazil and China is in space technology. By a protocol on cooperation signed in 1988 Brazil and China have agreed

through the China-Brazil Earth Resources Satellite (CBERS) project to share costs (China 70%, Brazil 30%) related to the development and construction of two satellites by the Chinese Academy of Space Technology (CAST) and Instituto Nacional de Pesquisas Espaciais (INPE). The first Sino-Brazilian satellite was successfully launched in October 1999 and CBERS 2 in October 2003. Through a Protocol of Cooperation in Space Technology signed in September 2000 both countries agreed to develop a new generation of satellites CBERS 3 and CBERS 4 with costs and use equally shared.

Table 3.2
Brazil : Value of imports from China of products affected by antidumping measures, 1989-2003, in US$ million*

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1
Barium carbonate	0	0.1	0.1	0	**0**	0	0	0	0	0	
Bicycle chains		**0**	0	0.1	0.9	0.9	1.8	4.7	3.4	3.2	
Bicycle tires	0	0	0	0	0.1	0.8	1.9	3.2	2.2	1.9	
Color and black pencils	0	0	0	0.1	0.7	0.6	1.6	4.4	2.6	**0.2**	
Garlic, fresh and refrigerated	0	0	0	0	0	7.7	17.0	25.5	**33.7**	27.3	
Glass inners for vacuum flasks	0	0	0	1.5	1.1	0.2	0	0	0	0.3	
Glyphosate	0	0	0	0	0	0.5	0.1	0	0.2	6.4	
High speed steel drills	0	0	0	0	0	0	0.1	0.4	0.9	0.6	
Mushrooms	0	0	0	0	0	0	0	0.4	1.1	1.6	
Padlocks	0	0	0	0.4	1.0	1.3	2.3	5.0	**0.6**	0.6	
Permanent magnets, ferrite rings and disks	0	0	0	0	0	0	0	0.3	0.6	0.8	
Table electric fans	0	0	0.2	0.4	1.0	4.0	6.5	**1.2**	0.4	0	
Vacuum flasks	0	0	0	0.1	0	0	0.2	0.2	1.8	1.9	

* Years when antidumping measures started to be effective are marked in bold typeface.
Sources: Brazil (1998) and Brazil (2002).

The two countries signed a memorandum of understanding in December 2002 covering the development of a joint project on ethanol production and use and also other areas of cooperation deemed of strategic interest (iron ore, steel, agro industry, software, drugs, civil engineering, and aeronautical, aeronautical and electronic industries).

International negotiations: bilateral trade relations and the World Trade Organization

Brazilian diplomatic strategy after the beginning of 2003 has reserved a particularly important role to enhanced relations with China. Key policy-makers and President Lula have repeatedly stressed the advantages of a strategy based on closer ties with other big developing economies such as China, India, Russia and South Africa. In spite of such assertions, and the announcement of framework bilateral agreements negotiations with at least some of them, no negotiations of free trade areas with these new partners have been concluded. Unless there is a radical *volte face* by Beijing it is unlikely that China will sign a bilateral trade agreement with Brazil in the midst of the growing pains of its accession to the World Trade Organization. There are doubts also about the real interests of Brazilian industry in such a negotiation.[37]

In the World Trade Organization, Brazil and China have cooperated closely in the G-20 group of developing economies that put strong pressure on the European Union and the United States to improve their joint text on agricultural negotiations before the Doha Round ministerial meeting at Cancún. This was one of the issues that led to the failure of the meeting in October 2003. There is scope for Brazil and China reaching joint stances in the WTO as both countries tend to be defensive in relation to a long list of issues which form the *demandeur* agenda of developed economies: investment rules, intellectual property, public procurement, services, environmental and labor standards to name just a few. But in relation to agriculture there is less common ground as China can hardly be included among the small worldwide group of agricultural efficient producers. In agriculture China's objectives are to assure special and differential treatment of developing economies that will allow the postponement of a liberalization of access to its agricultural markets. There is a possible common agenda to justify a G-20 coalition of

[37] It has been reported in the Brazilian press that the Brazilian Trade Minister under Cardoso was told so at the highest level when he visited Beijin in late 2002.

more advanced developing economies but much less so in agriculture than in relation to other issues.

4. Conclusions

Most observers suggest that China is likely to continue in the present growth path for another two decades based on the past experiences of Japan, Taiwan and South Korea as they tended to approach the level of U.S. GDP per capita.[38] This long-term trend is likely to prevail even if there are periods of temporary instability and slower growth.

China's fast growth will result in a fast rate of growth of Chinese imports of raw materials for which there is no possibility of expansion of domestic supply at a pace in line with the overall rate of growth and where consumption per capita levels continue to converge towards those found in mature developed economies. This includes iron ore and soybeans and, possibly, a significant number of other commodities for which there is no very significant demand presently such as prime beef or orange juice. Exports of iron and steel products to China are expected to decrease significantly in the mid-term as the massive present capacity expansion matures.

China will continue to expand its exports much faster than the world average and to gain market share in third markets at the expense of less competitive economies. In the case of Brazil the two sectors most likely to be affected are iron and steel products in the mid-term perspective and transport equipment in the longer term. Increased market shares of both imports from China and products produced by Chinese FDI in Brazil are to be expected, especially in household electronic and telecommunications products.

China will also act as a powerful magnet to attract FDI that would be diverted from other destinations including Brazil, especially so as investment opportunities in the provision of services open up but also in sectors until now relatively undeveloped in China as the automotive industry. Competition for FDI in the automotive sector is direct:

[38] See data from Maddison (2001) on growth of such economies since 1950 as quoted by Wolf (2003).

multinational firms are likely to invest in China rather than in Brazil where there has been overcapacity for a considerable time. It is also likely that they would prefer to invest in China to be able to reap the advantages of scale that have proved to be elusive in Brazil. Most Brazilian investments in China are likely be in projects involving the exploitation of China's factor endowments which are complementary to those of Brazil such as in coal extraction and coke production. Coal exports to Brazil also make sense from a logistical point of view since they would generate return freight in an extremely unbalanced bilateral trade from the viewpoint of bulk shipping.

Bilateral cooperation priorities while taking into account the present strategic role of Brazil as a supplier of commodities to China could also involve programs to absorb Chinese expertise in enhancing its performance related to crucial innovation variables. International comparisons suggest China has been particularly successful in improving indicators related to education and research in hard science and engineering, increase in the number of researchers in R&D, and improvement in university-company research collaboration. This is a field where market failures are often found and state intervention may play a role in the dissemination of knowledge, in the reduction of private risk and in the removal of some of the difficulties involved in the private appropriation of economic gains derived from research results.

Perhaps the most important objective to be kept in mind in the present Brazilian government effort to permanent redistribute resources in economic diplomacy, trade promotion and involvement of government-controlled banks in favor of deepening relations with China is that it should be sustained even in times of turbulence. Brazil had an almost insignificant role in China in the past and it is important that this should be corrected. The effort to seek closer relations with Beijin should sustained and not necessarily be dependent on broader coalitions of like-minded countries.

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